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10/072,773	02/08/2002	Walter Kraft	SCHSM-011XX	2015

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EXAMINER	
TUCKER, WESLEY J	
ART UNIT	**PAPER NUMBER**
2623	

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/072,773	KRAFT ET AL.	
	Examiner	Art Unit	
	Wes Tucker	2623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,6-11,14,15,17,18 and 22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,6-11,14,15,17,18 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Jan. 9, 2006 has been entered.

Response to Amendment

1. Applicant's response and amendment filed Jan. 9th, 2006 has been entered and made of record.

2. Applicant has amended claims 1, 3, 6-11 and 14.

Claims 2, 4-5, 12-13, 16 and 19-21 have been canceled.

New Claim 22 has been added.

Claims 1, 3, 6-11, 14-15 and 17-18 and 22 are currently pending.

3. Applicant's arguments have been entered and made of record but are not considered fully persuasive for at least the following reasons:

4. Applicant has amended the independent claims to include the limitations in the content of canceled claim 13, which cited the feature of a detail reduction process, which reduces the details of the image to create a coarse image. Examiner previously cited the reference to U.S. Patent 5,270,530 to Godlewski et al. to teach this element of the present invention. Godlewski teaches a detail reduction process that blurs the image thereby reducing the image detail and using the blurred image in order to enhance edge information and to create a sharpening mask. This is essentially performing the well-known process of unsharp mask sharpening.

Applicant has attempted to distinguish the method of the present application from the reference of Godlewski by adding to the language of the claims the further limitation of a downsampling process to create the "detail reduced" image.

In the specification on page 5, starting at line 25, Applicant states that:

"For example, the image data representing the image can be subjected before and/or after the correction to a process which causes a softening, such as, for example, a data reduction process (for example Downsampling process), a low-pass filtering, an averaging process or a gauss filter. Furthermore, with these processes used for the removal of image details images can be produced which represent the original image without details, I.e. "coarse. Such images are in the following referred to as "coarse images". Based on these coarse images, unsharp masks can be produced."

Therefore it is clear that downsampling and blurring the image create the same desired effect and are used to create unsharp masks. The Applicant's amendments do not distinguish the claims over other prior art unsharp masking techniques.

For example the newly presented reference of U.S. Patent 5,703,965 to Fu et al. discloses a downsampling process or decimating process in which an image has its resolution lowered in order to shorten processing time for transferring the image. Edge information is sent along with the lowered resolution image and used to sharpen the image (Fig. 5).

In the specification Applicant discloses on page 6, line 5, that by using a downsampled image rather than a blurred, or low-passed image with decreased detail, that processing can be saved because the data that is the image itself is smaller. Fu teaches that this is why the image is downsampled as well, in order to transmit or process a smaller amount of data to describe the image (column 1, line 36-column 2, line36). This appears to be the only motivation for using a coarse image with decreased resolution as opposed to a smoothed or blurred image.

Therefore as taught by both Fu and the specification of the present application, it would have been obvious to one of ordinary skill in the art at the time of invention to use a downsampled course image to determine sharpening regions in place of the reduced detail image (by blurring etc. as shown in Godlewski and comparable to methods in Applicants specification) in order to save on processing time and expense.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 6-11, 14, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of U.S. Patent 6,603,878 to Takemoto, U.S. Patent 6,856,704 to Gallagher et al., U.S. Patent 5,270,530 to Godlewski et al., and U.S. Patent 5,703,965 to Fu et al.

With regard to claim 1, Takemoto discloses a method for changing local sharpness of a photographic image having a multitude of image elements comprising:

Recognizing at least one region of the photographic image, each such region containing an image of sky, skin or vegetation, wherein the recognition is based on a characteristic color in the respective region (column 15, lines 5-15);

Determining a correction mask, elements of the correction mask describing changes of the sharpness or local sharpness to be made to respective corresponding image elements of the photographic image (column 13, lines 55- column 14, line 8), comprising:

Using information related the photographic image including at least local contrast in the photographic image, to determine at least some of the elements of the correction mask (column 14, lines 1-8, see sharpness coefficient K); and wherein:

The sharpness of at least some image elements in regions of the photographic imagethat contain images of skin or sky are to be decreased, according to information related to respective regions (column 14, lines 9-17); and

Applying the correction mask to the photographic image (column 14, lines 17-35).

Takemoto does not explicitly disclose the sharpness of at least some image elements in regions of the photographic image that contain images of vegetation are to be increased, according to information related to respective regions. Gallagher teaches the variable sharpening of grass and variable de-sharpening of skin and sky according to context within the image (column 20, lines 11-26). Therefore it would have been obvious to one of ordinary skill in the art to account for image content such as grass and vegetation as taught by Gallagher in addition to the variable sharpening and de-sharpening in relation to skin and sky content in images as disclosed by Takemoto in order to create an overall more appealing image.

Claim 1 has been amended to include the limitations of previously rejected claim 13 including applying a downsampling process to the photographic image to be sharpened, such that coarse image data resulting therefrom represents a coarse image with less detail than the photographic image to be sharpened, wherein the coarse image includes a multitude of coarse image elements

Determining a correction mask, elements of the correction mask describing changes or local sharpness to be made to respective corresponding elements of the photographic image;

Wherein determining the correction mask comprises using the corrected coarse correction mask.

As best determined, Claim 13 describes the well known operation known as unsharp masking. Godlewski discloses the steps of unsharp masking including:

Applying an image detail reduction process to the photographic image to be sharpened, such that coarse image data resulting therefrom represents a coarse image with less details than the photographic image to be sharpened, wherein the coarse image includes a multitude of coarse elements (column 10, lines 14-22, see blurring);

On the basis of local contrast information, determining a coarse correction mask that describes a correction of the image sharpness of the coarse image (column 10, lines 22-25, the coarse correction mask is interpreted as the edge only image); and

Based on information related to the photographic image, correcting elements of the coarse correction mask (column 10, lines 24-28, the correction of elements is interpreted as the low boost factors); and wherein

Determining the correction mask comprises using the corrected coarse correction mask (column 10, lines 24-28). The unsharp mask or correction image is determined from the image and the boosted edges only image.

Takemoto discloses unsharp masking (column 14, line 1), but does not disclose the known steps claimed in claim 13. Godlewski discloses the steps of unsharp

masking. Therefore it would have been obvious o one of ordinary skill in the art to apply the unsharp masking steps taught by Godlewski in the unsharp masking of Takemoto.

None of the references to Takemoto, Gallagher or Godlewski disclose the added feature of applying a downsampling process in the detail reduction process typically associated with unsharp masking.

In the specification on page 5, starting at line 25, Applicant states that:

"For example, the image data representing the image can be subjected before and/or after the correction to a process which causes a softening, such as, for example, a data reduction process (for example Downsampling process), a low-pass filtering, an averaging process or a gauss filter. Furthermore, with these processes used for the removal of image details images can be produced which represent the original image without details, I.e. "coarse. Such images are in the following referred to as "coarse images". Based on these coarse images, unsharp masks can be produced."

Therefore it is clear that downsampling and blurring the image create the same desired effect and are used to create unsharp masks. The Applicant's amendments do not distinguish the claims over other prior art unsharp masking techniques.

For example the newly presented reference of U.S. Patent 5,703,965 to Fu et al. discloses a downsampling process or decimating process in which an image has its resolution lowered in order to shorten processing time for transferring the image. Edge

information is sent along with the lowered resolution image and used to sharpen the image (Fig. 5).

In the specification Applicant discloses on page 6, line 5, that by using a downsampled image rather than a blurred, or low-passed image with decreased detail, that processing can be saved because the data that is the image itself is smaller. Fu teaches that this is why the image is downsampled as well, in order to transmit or process a smaller amount of data to describe the image (column 1, line 36-column 2, line36). This appears to be the only motivation for using a coarse image with decreased resolution as opposed to a smoothed or blurred image.

Therefore as taught by both Fu and the specification of the present application, it would have been obvious to one of ordinary skill in the art at the time of invention to use a downsampled course image to determine sharpening regions in place of the reduced detail image (by blurring etc. as shown in Godlewski and comparable to methods in Applicants specification) in order to save on processing time and expense.

With regard to claim 3, Takemoto discloses wherein using information related to the photographic image comprises using information related to at least one of color tone, color saturation and color contrast (column 14, lines 10-15) of at least one image element in the vicinity of a target image element to determine an element of the correction mask that corresponds to the target image element (column 14, lines 10-15). The target image element is interpreted as that of a region of sky or skin.

With regard to claim 6, Takemoto discloses the method wherein using information related to the photographic image comprises using at least one of:

Information obtained from an analysis of the photographic image (column 13, lines 52-55). Analysis is inherent in determining where regions of skin or sky reside).

Takemoto further discloses information associated with the photographic image and input into a correction process (column 4, lines 34-49). Here the metadata described is interpreted as information input to the correction process.

With regard to claim 7, Takemoto discloses the method further comprising:

Analyzing the photographic image to determine if the photographic image contains at least one characteristic image region having a multitude of image elements (column 14, lines 1-15). Analyzing he4 image is inherent to determining where regions of skin or sky are in the image.

Takemoto further discloses assigning nominal sharpness or a nominal image sharpness range to at least one determined characteristic region (column 14, lines 1-10). A sharpness coefficient K is used to determine the sharpness. The Sorg value is interpreted as the nominal sharpness.

Wherein determining the correction mask comprises determining at least some of the elements of the correction mask, such that elements of the correction mask that relate to image elements in the at least one determined characteristic image region cause at least an approximation of the image sharpness to the assigned nominal image

sharpness or the assigned nominal image sharpness range (column 14, lines 1-35). The unsharp masking correction is determined in view of a sharpness correction coefficient K, which is adjusted according to level of sharpness or sharpness range.

With regard to claim 8, Takemoto discloses the method of claim 7, further comprising determining a degree of association of an image element to a characteristic image region (column 10, lines 22-35). The degree of association is interpreted as the gradation hardening used to determine separate regions of the image.

Determining the correction mask comprises determining at least some of the elements of the correction mask based on the nominal image sharpness or the nominal image sharpness range and the degree of association of the respective image elements (column 10, lines 22-35 and column 14, lines 1-14). The determination of the correction mask takes into account the degree of association by first determining gradation and the nominal sharpness range is considered included in the original sharpness value in equation 7.

With regard to claim 9, Takemoto discloses the method of claim 6, wherein:

Using information related to the photographic image comprises using color values and image properties including at least brightness and color tone (column 13, lines 17-34) and further comprising:

Determining image content information, comprising: associating at least one color value with at least one pre-selected characteristic color value (column 13, lines 17-34, see cyan and blue) and

Associating a nominal image sharpness or a nominal image sharpness range with at least one pre-selected characteristic color value (column 14, lines 9-17) wherein

Determining the correction comprises determining at least some of the elements of the correction mask comprises determining at least some of the elements of the correction mask based on color values of image elements of the photographic image that correspond to the respective elements of the correction mask and the pre-selected characteristic color values associated with the color values of the respective image elements (column 14, lines 9-17) and

The nominal image sharpness or the nominal image sharpness of the nominal image sharpness range associated with the predetermined characteristic color values of the respective image elements of the correction mask and the pre-selected characteristic color values associated with the color values of the respective image elements (column 14, lines 1-35). Takemoto discloses that certain sections are extracted and enhanced/sharpened according to there color using a K sharpness enhancement coefficient. It is interpreted that a value of K corresponds to a sharpness enhancement or a particular degree of sharpness or unsharpness. While Takemoto may not explicitly disclose sharpness ranges designated to each color, it is inferred that certain values of K would be used for skin colored or sky colored regions as the value of K to be used must be known according to certain image content or color.

With regard to claim 10, Takemoto discloses the method of claim 6, further comprising:

Analyzing the photographic image to be corrected or an image derived therefrom for a transition between two image regions that each includes a multitude of neighboring image elements, wherein one of the image regions has a different structure than the other image region (column 11, lines 5-35). Takemoto discloses a gradation detecting and enhancing step. The gradation is interpreted as a transition between two image regions having different structures.

Determining the correction mask comprises determining at least some of the elements of the correction mask based on whether or not the respective elements relate to a transition (column 11, lines 5-35 and column 14, lines 1-17). Takemoto discloses the unsharp masking that is performed after the gradation or transition between image regions is detected and the gradation or hardening enhancement is performed. Therefore the correction mask determination is based on the gradation or image region detecting process.

With regard to claim 11, Takemoto discloses the method of claim 6, wherein using information related to the photographic image comprises using data related to the position of artifacts in the photographic image and determining at least some elements of the correction mask based on whether or not the respective elements relate to locations in the photographic image where artifacts are present (column 14, lines 17-

26). Takemoto discloses calculating the sharpness enhancing function in order to suppress noise and graininess therefore calculating elements of the correction mask where artifacts or noise is present.

With regard to claim 14, Takemoto discloses a device for focusing a photographic image that includes a multitude of image elements, comprising:

A recognition unit operative to recognize at least one region of the photographic image, each such region containing an image of skin, sky or vegetation, wherein the recognition is based at least on a characteristic color in the respective region (column 15, lines 5-15);

A correction mask determining unit operative to determine a correction mask wherein elements of the correction mask describe changes of sharpness to be made to respective corresponding image elements of the photographic image (column 13, lines 55- column 14, line 8); and

The elements of the correction mask are determined on the basis of an image property, including at least a local contrast, and additional information relating to the image (column 14, lines 1-8, see sharpness coefficient K), such that the sharpness of at least some image elements in regions of the photographic image that contain images of skin or sky are to be decreased according to information related to the respective regions (column 14, lines 9-17);

Takemoto does not explicitly disclose the sharpness of at least some image elements in regions of the photographic image that contain image of vegetation are to

be increased, according to information related to the respective regions. Gallagher teaches the variable sharpening of grass and variable de-sharpening of skin and sky according to context within the image (column 20, lines 11-26). Therefore it would have been obvious to one of ordinary skill in the art to account for image content such as grass and vegetation as taught by Gallagher in addition to the variable sharpening and de-sharpening in relation to skin and sky content in images as disclosed by Takemoto in order to create an overall more appealing image.

Claim 14 has been amended to include the limitations similar in nature to those of previously rejected claim 13 including a downsampling unit operative to produce a coarse image having less detail than the photographic image;

A correction mask determining unit operative to determine a correction mask using the coarse correction mask

As best determined, Claim 13 describes the well known operation known as unsharp masking. Godlewski discloses the steps of unsharp masking including:

Applying an image detail reduction process to the photographic image to be sharpened, such that coarse image data resulting therefrom represents a coarse image with less details than the photographic image to be sharpened, wherein the coarse image includes a multitude of coarse elements (column 10, lines 14-22, see blurring);

On the basis of local contrast information, determining a coarse correction mask that describes a correction of the image sharpness of the coarse image (column 10, lines 22-25, the coarse correction mask is interpreted as the edge only image); and

Based on information related to the photographic image, correcting elements of the coarse correction mask (column 10, lines 24-28, the correction of elements is interpreted as the low boost factors); and wherein

Determining the correction mask comprises using the corrected coarse correction mask (column 10, lines 24-28). The unsharp mask or correction image is determined from the image and the boosted edges only image.

Takemoto discloses unsharp masking (column 14, line 1), but does not disclose the known steps claimed in claim 13. Godlewski discloses the steps of unsharp masking. Therefore it would have been obvious o one of ordinary skill in the art to apply the unsharp masking steps taught by Godlewski in the unsharp masking of Takemoto.

None of the references to Takemoto, Gallagher or Godlewski disclose the added feature of applying a downsampling process in the detail reduction process typically associated with unsharp masking.

In the specification on page 5, starting at line 25, Applicant states that:

"For example, the image data representing the image can be subjected before and/or after the correction to a process which causes a softening, such as, for example, a data reduction process (for example Downsampling process), a low-pass filtering, an averaging process or a gauss filter. Furthermore, with these processes used for the removal of image details images can be produced which represent the original image without details, I.e. "coarse. Such images are

in the following referred to as "coarse images". Based on these coarse images, unsharp masks can be produced."

Therefore it is clear that downsampling and blurring the image create the same desired effect and are used to create unsharp masks. The Applicant's amendments do not distinguish the claims over other prior art unsharp masking techniques.

For example the newly presented reference of U.S. Patent 5,703,965 to Fu et al. discloses a downsampling process or decimating process in which an image has its resolution lowered in order to shorten processing time for transferring the image. Edge information is sent along with the lowered resolution image and used to sharpen the image (Fig. 5).

In the specification Applicant discloses on page 6, line 5, that by using a downsampled image rather than a blurred, or low-passed image with decreased detail, that processing can be saved because the data that is the image itself is smaller. Fu teaches that this is why the image is downsampled as well, in order to transmit or process a smaller amount of data to describe the image (column 1, line 36-column 2, line36). This appears to be the only motivation for using a coarse image with decreased resolution as opposed to a smoothed or blurred image.

Therefore as taught by both Fu and the specification of the present application, it would have been obvious to one of ordinary skill in the art at the time of invention to use a downsampled course image to determine sharpening regions in place of the reduced detail image (by blurring etc. as shown in Godlewski and comparable to methods in Applicants specification) in order to save on processing time and expense.

With regard to claim 15, Takemoto discloses an article of manufacture, comprising a computer readable medium storing computer instructions operable to cause a computer that executes the instructions to perform the method of claim 1 (Fig. 3).

With regard to claim 17, Takemoto discloses the device of claim 14, further comprising an image reproduction device (Fig. 3, elements 12, 16 and 20).

With regard to claim 18, Takemoto discloses the device of claim 17, wherein the image reproduction device is selected from a group consisting of a photographic printer, a printer, a photolab, a minilab, a monitor, and a computer with a monitor (Fig. 3, elements 12, 16 and 20).

With regard to new claim 22, Takemoto discloses a method for changing local sharpness of a photographic image having a multitude of image elements comprising:

Recognizing at least one region of the photographic image, each such region containing an image of sky, skin or vegetation, wherein the recognition is based on a characteristic color in the respective region (column 15, lines 5-15);

Determining a correction mask, elements of the correction mask describing changes of the sharpness or local sharpness to be made to respective corresponding

image elements of the photographic image (column 13, lines 55- column 14, line 8), comprising:

Using information related the photographic image including at least local contrast in the photographic image, to determine at least some of the elements of the correction mask, wherein sharpness of at least some image elements in regions of the coarse image exhibiting a high contrast is decreased (column 14, lines 1-8, see sharpness coefficient K); and wherein:

The sharpness of at least some image elements in regions of the photographic imagethat contain images of skin or sky are to be decreased, according to information related to respective regions (column 14, lines 9-17); and

Applying the correction mask to the photographic image (column 14, lines 17-35).

Takemoto does not explicitly disclose the sharpness of at least some image elements in regions of the photographic image that contain images of vegetation are to be increased, according to information related to respective regions. Gallagher teaches the variable sharpening of grass and variable de-sharpening of skin and sky according to context within the image (column 20, lines 11-26). Therefore it would have been obvious to one of ordinary skill in the art to account for image content such as grass and vegetation as taught by Gallagher in addition to the variable sharpening and de-sharpening in relation to skin and sky content in images as disclosed by Takemoto in order to create an overall more appealing image.

The discussion with regard to claim 1 also applies to new claim 22 with regard to the features of applying a downsampling process to the photographic image to be sharpened, such that coarse image data resulting therefrom represents a coarse image with less detail than the photographic image to be sharpened, wherein the coarse image includes a multitude of coarse image elements

Determining a correction mask, elements of the correction mask describing changes or local sharpness to be made to respective corresponding elements of the photographic image;

Wherein determining the correction mask comprises using the corrected coarse correction mask.

As best determined, Claim 13 describes the well known operation known as unsharp masking. Godlewski discloses the steps of unsharp masking including:

Applying an image detail reduction process to the photographic image to be sharpened, such that coarse image data resulting therefrom represents a coarse image with less details than the photographic image to be sharpened, wherein the coarse image includes a multitude of coarse elements (column 10, lines 14-22, see blurring);

On the basis of local contrast information, determining a coarse correction mask that describes a correction of the image sharpness of the coarse image (column 10, lines 22-25, the coarse correction mask is interpreted as the edge only image); and

Based on information related to the photographic image, correcting elements of the coarse correction mask (column 10, lines 24-28, the correction of elements is interpreted as the low boost factors); and wherein

Determining the correction mask comprises using the corrected coarse correction mask (column 10, lines 24-28). The unsharp mask or correction image is determined from the image and the boosted edges only image.

Takemoto discloses unsharp masking (column 14, line 1), but does not disclose the known steps claimed in claim 13. Godlewski discloses the steps of unsharp masking. Therefore it would have been obvious o one of ordinary skill in the art to apply the unsharp masking steps taught by Godlewski in the unsharp masking of Takemoto.

None of the references to Takemoto, Gallagher or Godlewski disclose the added feature of applying a downsampling process in the detail reduction process typically associated with unsharp masking.

In the specification on page 5, starting at line 25, Applicant states that:

"For example, the image data representing the image can be subjected before and/or after the correction to a process which causes a softening, such as, for example, a data reduction process (for example Downsampling process), a low-pass filtering, an averaging process or a gauss filter. Furthermore, with these processes used for the removal of image details images can be produced which represent the original image without details, I.e. "coarse. Such images are in the following referred to as "coarse images". Based on these coarse images, unsharp masks can be produced."

Therefore it is clear that downsampling and blurring the image create the same desired effect and are used to create unsharp masks. The Applicant's amendments do not distinguish the claims over other prior art unsharp masking techniques.

For example the newly presented reference of U.S. Patent 5,703,965 to Fu et al. discloses a downsampling process or decimating process in which an image has its resolution lowered in order to shorten processing time for transferring the image. Edge information is sent along with the lowered resolution image and used to sharpen the image (Fig. 5).

In the specification Applicant discloses on page 6, line 5, that by using a downsampled image rather than a blurred, or low-passed image with decreased detail, that processing can be saved because the data that is the image itself is smaller. Fu teaches that this is why the image is downsampled as well, in order to transmit or process a smaller amount of data to describe the image (column 1, line 36-column 2, line36). This appears to be the only motivation for using a coarse image with decreased resolution as opposed to a smoothed or blurred image.

Therefore as taught by both Fu and the specification of the present application, it would have been obvious to one of ordinary skill in the art at the time of invention to use a downsampled course image to determine sharpening regions in place of the reduced detail image (by blurring etc. as shown in Godlewski and comparable to methods in Applicants specification) in order to save on processing time and expense.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker

1-26-06

VIKKRAM BALI
PRIMARY EXAMINER